XSEDE 12 Conference Final Report

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A. Document History

Relevant Sections	Version	Date	Changes	Author
DRAFT		10/29/2012	Baseline	Stewart
Final version completed		11/12/2012	Final version	Stewart
Details fleshed out in final version, a few blanks filled in		6/6/2014		Jennet Tillotson, Robert Ping, Therese Miller
Finalized for upload to IU IUScholarWorks		6/19/2014	Final edits on satisfaction, diversity, edit of executive summary	Stewart

B. Document Scope

This document is a public report of the activities and accomplishments of XSEDE12 – the first in the XSEDE conference series.

C. Executive Summary

The Inaugural XSEDE conference – XSEDE12 – was held 16-20 July in the Hotel Intercontinental on the Magnificent Mile of Chicago, IL. XSEDE's goal for this conference was to set new precedents and establish a path to make XSEDE a well recognized 2nd-tier conference (it takes many years to become a 1st-tier conference). We placed special emphasis on increasing the technical quality of the presentations and papers contributed to the proceedings, building attendee diversity, and focusing more attention on communities particularly important for cyberinfrastructure today and in the future – students and XSEDE campus champions. To build the quality of the technical content, we broadened conference scope to include high performance and high throughput computing generally; added a track on education, outreach, and training; and increased the focus on scientific outcomes. We accomplished the latter by inviting scientists to present the computational work that enabled scientific accomplishments, without reporting the accomplishments themselves in detail – preserving the ability of scientists to publish their core work in the most relevant disciplinary journals and conferences.

The XSEDE12 conference was a great success. A total of 616 individuals registered for the conference and 586 attended. A total of 104 talks were presented in the technical tracks; of these, 64 were represented in the conference proceedings by a full (peer-reviewed) paper. The overall acceptance rate was 62%.

The conference included an excellent lineup of keynote and plenary speakers, including a National Medial of Science recipient, an award-winning electronics engineer (and single mother) from India, and an Emmy award winner.

Student and XSEDE campus champion participation was increased and enhanced by a grant award from the National Science Foundation. This helped fund special activities for students and campus champions. A mentoring program also added value to the student experience.

Overall the diversity of attendees was very high for a conference in technology areas, as shown in the tables below. Just under 25% of attendees were women, and 20% were African American, percentages that indicate success in reaching populations often underrepresented at technology conferences. Diversity was even greater among students – a good sign for the future. Among students, 38% were women, and 26% were African American.

In order to ensure that this conference was of lasting value, the participants and organizers left behind a clear digital record:

- The conference program is available online at https://www.xsede.org/web/xsede12/program/schedule
- The proceedings of the conference are available online at http://dl.acm.org/citation.cfm?id=2335755
- pdfs of most of the presentations given at the conference – particularly the keynote and plenary talks – are online at https://www.xsede.org/web/xsede12/presentations
- This conference was offered in cooperation with the ACM Special Group on Applications (SIGAPP). This endorsement of the technical quality of the conference was greatly appreciated, and added to the credibility of the conference as we sought high quality contributions and sponsors.

As XSEDE Principal Investigator John Towns said, "This conference series has evolved into an important meeting focused on the needs of the community supported by XSEDE, and it will cover a breadth of scientific, technical, and social aspects of cyberinfrastructure."

Perhaps the most telling indication of the conference quality, however, was the number of smiles on participant faces and the palpable sense of excitement and success. XSEDE12 successfully launched a new conference series – one we expect to grow and become even more successful in future years.

D. Introduction

The Inaugural XSEDE conference – XSEDE12 – was held 16-20 July in the Hotel Intercontinental on the Magnificent Mile of Chicago, IL. Much as XSEDE replaced and extends TeraGrid as the largest NSF-funded provider of advanced cyberinfrastructure services for the US open research community, XSEDE12 built on the successful series of TeraGrid conferences.

The XSEDE12 conference included the most successful and popular aspects of the previous TeraGrid conferences:

- Tutorials on the first day of the conference
- Excellent keynote and plenary speakers within and beyond the computational science community
- Special aspects of the program for students and Campus Champions
- A visualization showcase, poster sessions, and excellent technical sessions.

XSEDE12 included these new features:

- Technical sessions focused on software, including software vendors discussing their products relative to the XSEDE environment; software engineering for XSEDE; and the challenges of delivering and using commercial software in the XSEDE environment
- A cybercafe' near the conference area, enabling participants to easily get online during breaks
- Special portions of the technical program targeted for students and Campus Champions
- A social calendar with events for students, a conference reception, and at least one free evening to enjoy Chicago.

This conference was a major point in the transition and evolution from TeraGrid to the eXtreme Science and Engineering Discovery Environment (XSEDE). As the inaugural conference in a new series, and the first-ever gathering of the community of XSEDE providers and users, it was a great success. The goals set by general conference chair Craig Stewart, in consultation with XSEDE PI John Towns, were:

- Provide an excellent conference event that effectively promotes information exchange relevant to XSEDE12 and the communities it serves, highlighting XSEDE's key role

nationally and internationally.

- Ensure XSEDE12 is operated so as to promote excellent organizational learning by:
    - Documenting through proposals and plans during the process of hosting XSEDE12 what we intended to do, in order to learn where we did and did not succeed, either through planning or luck.
    - Evaluating the conference formally and effectively
- Establish new diversity standards for IT conferences across dimensions by promoting attendance across racial, ethnic, and status lines (student, professional staff, faculty); and accommodating variously-abled individuals by providing physical accessibility and accommodating sight and hearing challenges).
- Establish XSEDE as a 2nd-tier computing conference with excellent technical, scientific, and education/outreach/education content during the conference and in the proceedings. (We chose 2nd tier as the goal for various reasons. The TeraGrid conference series was generally seen as 3rd tier, at least for its proceedings. As well, it can take years or decades to become a 1st-tier conference and join SCxy and HPDC.)
- Have XSEDE12 break even, or at least come close.

The rest of this report outlines the conference events and outcomes from "event-centric" and educational viewpoints. The conference proceedings – the technical outcomes of the conference – are published online at http://dl.acm.org/citation.cfm?id=2335755

E. The event and venue

E.1. Attendance and acceptance rates

A total of 616 individuals registered for the conference and 586 attended. A total of 104 talks were presented in the technical tracks; of these, 64 were represented in the conference proceedings by a full (peer-reviewed) paper.

Acceptance rates for the technical tracks were as follows:

Technology:	48% (13/27)*
Science:	56% (23/41)*
Software:	72% (13/18)
EOT:	93% (14/15)
Total:	**62% (63/101)***

*Note: The Science and Technology tracks invited three talks independent of the review process. These are not included in these totals.

Tutorials involved a more rigorous and involved review process than most past TeraGrid conferences, with an 81% acceptance rate (17/21).

E.2. Highlights of the conference

As the last major XSEDE event of the first year of the XSEDE project, this conference provided an opportunity to reflect on accomplishments, the impact on science and engineering, and the programs that promise future success. XSEDE12 offered the first opportunity to come together as a community dedicated to:

- Lowering the entry barrier to advanced computation
- Achieving new scientific and engineering breakthroughs
- Establishing new and improved methods of learning about, accessing, and using the resources of the National Science Foundation-funded project, XSEDE.

The conference included an exciting lineup of speakers from around the world presenting on a variety of topics, with something of interest for almost everyone. The following were keynote and plenary speakers:

Richard Tapia, mathematician, Rice University professor, diversity advocate, and recent National Medal of Science recipient (keynote speaker)

Gayatri Buragohain, an award-winning electronics engineer from India, and the founder of Feminist Approach to Technology and co-founder of Joint Leap Technologies

Thomas Eickermann, head of communication systems division at the Julich Supercomputing Centre, Germany

Jim Kinter III, director of the Center for Ocean-Land-Atmosphere Studies (COLA) and a professor at George Mason University

Steven Reiner, Emmy Award winner, associate professor of journalism at Stony Brook University, and former producer of "60 Minutes."

James Gutowski, speaking on behalf of the XSEDE12 Platinum-level sponsorship by Dell and Intel. He focused on the innovative Stampede system, to be deployed by the Texas Advanced Computing Center in partnership with Dell and Intel.

At the beginning of the conference, a day of **tutorials** covered accelerator programming, visualization, maximizing productivity on XSEDE, cloud infrastructures, building gateways, improving performance on XSEDE systems, new XSEDE resources, and more.

The XSEDE12 **technical program** provided an opportunity to present and discuss significant science achievements made possible through cutting-edge cyberinfrastructure, and the advancements in software, technology, and education that support those research efforts. This year's program featured science papers drawn from a number of submissions on many topics, including the acceleration of molecular dynamics simulations, multi-scale simulations of blood flow, mining social media data, humanities supercomputing for large-scale video analysis, simulations involving storm interaction and tornado prediction, hybrid MPI/OpenMP simulation of DNS turbulence, and astronomy simulations of black hole binary spirals.

The technology track focused on systems and middleware, with talks on software engineering best practices, technologies for efficient use of heterogeneous nodes, evaluating data-intensive supercomputers, XSEDE parallel and distributed file system technologies, grid system software, and other technologies.

In the **software and software environments track,** researchers presented work on a phylogenetics science gateway, parallel debugging, parallel software programming tools, campus bridging, and improving bioinformatics software performance.

The **education, outreach and training track** included discussions of science, technology, engineering, and mathematics (STEM) program evaluation; educational tools using cyberinfrastructure; XSEDE user and K-12 outreach; and including minority students in computational research.

Activities designed for and enjoyed by **student attendees** included a student dinner

Sunday night, a special track for student posters, and a student programming competition.

The **poster display, reception, and visualization showcase** brought together scientific staff, faculty, and student researchers for in-depth discussions and sharing research.

Birds of a Feather and panel sessions provided a platform for discussing opportunities and challenges in big data and data-intensive computing, scientific cloud computing, cloud/HPC/grid educational activities, heterogeneous computing, improving the accessibility of advanced computing resources, campus bridging, software sustainability, and security.

The conference program is available online at
https://www.xsede.org/web/xsede12/program/schedule

The proceedings of the conference are available online at
http://dl.acm.org/citation.cfm?id=2335755

pdfs of most of the presentations given at the conference – particularly the keynote and plenary talks – are online at https://www.xsede.org/web/xsede12/presentations

While not published, the XSEDE12 organizers provided to the XSEDE13 organizers all of the internal proposals, plans, and working documents generated during the course of the conference – a total of more than 600 pages of planning materials to aid future organizers of XSEDE conferences.

This conference was offered in cooperation with the ACM Special Group on Applications (SIGAPP). This endorsement of the technical quality of the conference was greatly appreciated, and added to the credibility of the conference as we sought high quality contributions and sponsors.

E.3.Awards

Twelve awards were presented on the final day of the conference. Following are the award categories, recipient names, and project titles. Congratulations to all award recipients on their outstanding work and contributions to XSEDE!

- **Best Paper** and **Best Science Paper: Margarete Jadamec, Magali Billen, Oliver Kreylos,** *"Three-dimensional Simulations of Geometrically Complex Subduction with Large Viscosity Variations"*
- **Best Technology Paper: Richard L. Moore, Leonard Carson, Amin Ghadersohi, Adam Jundt, Kenneth Yoshimoto, William Young,** *"Analyzing Throughput and Utilization on Trestles"*

- **Best Software and Software Environments Paper: Katherine Lawrence, Nancy Wilkins-Diehr,** *"Roadmaps, Not Blueprints: Paving the Way to Science Gateway Success"*
- **Best Education, Outreach and Training Paper: D. R. Mattson, Edee Wiziecki, R.J. Mashi,** *"Enhancing Chemistry Teaching and Learning through Cyberinfrastructure"*
- **Best Student Paper: Justin McKennon, Gary Forrester, Gaurav Khanna,** SCIENCE TRACK: *"High Accuracy Gravitational Waveforms from Black Hole Binary Inspirals Using OpenCL"*
- **Best Visualization: Greg Abram, Carsten Burstedde, Omar Ghattas, James Martin, Georg Stadler, Lucas Wilcox,** *"Visualization of Global Seismic Wave Propagation Simulation"*
- **Best Poster: Bhanu Rekepalli, Paul Giblock, Christopher Reardon, Mark Fahey, Subhra Sarkar,** *"Petascale Informatics Applications Development on XSEDE Supercomputers"*
- **Best Graduate Poster: Andrew Kail, Kwai Wong, Elton Freeman, Jerry Baker,** *"A Scalable Software Framework for Thermal Radiation Simulation"* - University of Tennessee
- **Best Undergraduate Poster: Joseph Peterson, Charles Wight,** *"Reaction Modeling of Mesoscale Granular Beds of Explosives Subjected to Impact"* - University of Utah
- **Best High School Poster: Mike Wu, Rekha Narasimhan,** *"Position and Vector Detection of Blind Spot Motion with the Horn-Schunck Optical Flow"* - Torrey Pines High School
- **First Place – Student Programming Contest: Manuel Zubieta, Justin Peyton, David Manosalvas, Nancy Carlos, Melissa Estrada, Grace Silva,** XSEDE Scholars Team 1, coached by Alice Fisher
- **Second Place – Student Programming Contest: Brian Leu, Albert Liu, Parth Sheth, Zeyin Zhang,** University of Michigan team, coached by Benson Muite

Figure 1. Winners of the student paper competition.

Figure 2. XSEDE 12 student programming contest winners.

F. Special student programs

F.1. NSF-supported Student Program and Campus Champions: Overview and goals

The National Science Foundation supported the XSEDE12 Student Program and Campus Champion program through grant award #1237393, "XSEDE and OSG 2012 Engagement Program for Students and Campus Champions" ($99,000, from 05/15/2012 to 04/30/2013). IU's Jennet Tillotson was Principal Investigator, with co-PIs Philip Blood (Pittsburgh Supercomputing Center) and Timothy Cartwright (Open Science Grid). The overall goal of the project was to motivate students to pursue educational and professional careers in computational science and engineering, while equipping them with the skills, training, and personal connections to help them succeed. (The project also supported the 2012 Open Science Grid (OSG) User School, which is not discussed here.)

The XSEDE12 Student Program provided activities for over 130 students. More than 100 received support to attend XSEDE12. Forty-six were funded through the NSF grant award. Of these, 19 were from EPSCoR states: Iowa, Louisiana, Mississippi, Missouri, Nebraska, Oklahoma, South Carolina, South Dakota, Tennessee, and Utah. Other supported groups included 39 XSEDE Scholars and 28 from the Student Engagement Program. The grant also funded seven Campus Champions from MSI schools, none of whom had other sources of support. (Eleven high school students received support to attend Student Day from the University of Notre Dame's summer institute.) Student attendees overall represented a broad span of disciplines: biology, chemistry, computer and information science, engineering, geology, physics, astronomy, and social science.

The main objectives of the XSEDE12 **Student Program** were to prepare students to use advanced cyberinfrastructure in their current and future research through participation in:

- Tutorials
- A poster competition
- Student paper presentations
- Interaction with conference attendees
- Participation in a mentoring program

The **Campus Champions** project was geared to provide Champions from underrepresented institutions an opportunity to enhance their technical skills and develop strong relationships with peers, in order to better assist researchers on their campuses in using advanced cyberinfrastructure. Its main objectives were to:

- Enable Champions to better advocate use of advanced CI for research, and to assist faculty and students on their campuses

- Develop best practices for Campus Champion outreach and assistance to researchers
- Build strong connections among Campus Champions and between Champions and XSEDE staff
- Determine how XSEDE can better assist Champions in their work.

F.2. Student program highlights and satisfaction

A Sunday student introductory get-together dinner included a keynote by Dr. Richard Tapia, who discussed the importance of education, drawing on his own life experiences. Two tracks of student/introductory tutorials included Henry Neeman's "Supercomputing in Plain English" tutorial and hands-on activities using LittleFe portable 6 node computational clusters.

Highlights of Student Day (Wednesday):

- More than 50 students participated in the Lunch with Interesting People
- 14 teams participated in the Programming Competition which used LittleFe computational clusters
- 40 students presented posters during the Student Poster Competition.

To track satisfaction with the Student Program, we asked attendees to fill out a post-conference survey. The 30 survey responders expressed general satisfaction with the XSEDE12 Student Program. On a scale of 1 (not useful) to 5 (very useful), responses ranged from 3.4 to 4.43. The student poster contest was marked as most useful, and the Introduction to High Performance Computing was ranked least useful. Participants were also asked to rank statements on a scale of 1 (strongly disagree) to 5 (strongly agree). These results indicate students were satisfied with the conference, gained a better understanding of XSEDE, and were interested in doing research involving advanced digital resources.

F.3. Campus Champion highlights and satisfaction

Of the 160 Campus Champions, 81 attended XSEDE12. Along with informal gatherings of Champions and XSEDE staff, Champions enjoyed and benefitted from several special events. A Campus Champions dinner provided opportunities for networking and featured speakers from XSEDE leadership who provided updates on XSEDE.

A focus-group meeting provided a forum for students presenting outcomes of two Campus Champion working groups, including materials and best practices for reaching out to scientists and helping them effectively use advanced cyberinfrastructure. Breakout sessions followed to discuss and refine these best practices. Here, experienced Champions

were grouped with those less experienced to provide mentoring.

A plenary session featured a panel of Campus Champions in discussion with an audience of XSEDE staff and the broader XSEDE community on how Champions could help XSEDE reach more scientists, more effectively, and how XSEDE could better support Champions in this role.

Among the reasons funded Champions listed for attending XSEDE12, the opportunity to network with and learn from other Champions was a high priority. In the post-conference survey, Champions listed the activities planned for them and the number of Champions in attendance among the strengths of XSEDE12. They also highlighted the "variety and diversity of community and opportunities for interactions" and the abundant "community building especially among champions and students."

Our conversations with Champions indicate that conference activities were very useful in helping them achieve their professional goals. One funded Champion had a paper accepted to the conference. Campus Champion Rachel Vincent-Finley, PhD, assistant professor of mathematics at Southern University and A & M College, who served on the Champion Panel at TeraGrid11, is now using the materials developed by the working and focus groups at XSEDE12 to work with potential XSEDE users, and is more engaged with the Champion and XSEDE communities. She also took part in a Training, Education, and Outreach panel during XSEDE13 titled "Development of Undergraduate and Graduate Programs in Computational Science: with Campus Champions David Toth, PhD, adjunct instructor in computer science at the University of Mary Washington, and Peter Molnar.

Funding Campus Champions to attend XSEDE conferences is a high-impact activity. Champions work directly with their campus researchers and students toward optimal solutions to facilitate their computational research activities. The gain knowledge and connections the conference provides impacts everyone with whom Champions interact. Some concrete examples from grant-supported Champions illustrate. One presented a paper at XSEDE12. Another is incorporating lessons learned at XSEDE12 into her interactions with users on her campuses. Two others presented a panel at XSEDE13 on developing educational programs in computational science.

F.3.1. Conference Papers and Presentations

One objective of the Student Program was to encourage students to attend and present posters and papers at XSEDE12. Following is a list of student posters and papers. Bold type indicates the student author who presented the work.

Posters

Addis, A. (2012). The Virtualization of Computing Cluster Data. XSEDE'12. Chicago, IL.
Adhikari, S. (2012). RNAseq expression profiling of soybean root nodules. XSEDE'12. Chicago, IL.
Ahlstrom, L. (2012). Simulation and energetic analysis of proteins in solution and in the crystal environment. XSEDE'12. Chicago, IL.
Badev, A. (2012). Discrete games in endogenous networks: Theory and evidence from a structural model of teen smoking. XSEDE'12. Chicago, IL.
Bilge, A. (2012). Investigating Evolution via Computational Biology: The Application of Phylogenetic Analyses to Epidemiology & Ecology. XSEDE'12. Chicago, IL.
Cingel, J (2012). Software Parallelization and Machine Translation. XSEDE'12. Chicago, IL.
Cramm Horn, R., Caruso, A., Paquette, M., Kitahara, A., Rulis, P. (2012). Creating a model of amorphous boron carbide using the LAMMPS molecular dynamics package. XSEDE'12. Chicago, IL.
Decotes, B., Wong, K., D'Azevedo E., Su, S. (2012). A Performance Study of Solving a Large Dense Matrix for Radiation Heat Transfer. XSEDE'12. Chicago, IL.
Dellor, C., Chi, H., Angulo-Rubio, D. (2012). Community Detection in Complex Networks based on Data Visualization. XSEDE'12. Chicago, IL.
Deng, J. (2012). Automatic calibration of a spatially explicit urban growth simulation model: A high-throughput computing approach. XSEDE'12. Chicago, IL.
Feng, W. (2012). Coupling conservation with land development within a cyberinfrastructure environment. XSEDE'12. Chicago, IL.
Glaser, N. (2012). Inter-Robot Kinetic Communication: A Novel Method of Communication Based on Biomimicry. XSEDE'12. Chicago, IL.
Glotter, M., Kelly, D., & Elliott, J. (2012). Using HTC to evaluate uncertainty and aggregation effects in the agricultural impacts of climate change. XSEDE'12. Chicago, IL.
Greer, J. (2012). Powertools: user level tools that improve researcher experience on shared computing systems. XSEDE'12. Chicago, IL.
Kail, A., Wong, K., Freeman, E., Baker, J. (2012). A Scalable Software Framework for Thermal Radiation Simulation. XSEDE'12. Chicago, IL.
Khadka, V. S. (2012). Differential gene expression of Vitis riparia root and shoot tissues under water deficit. XSEDE'12. Chicago, IL.
Krieder, S., Raicu, I., Grimmer, B. (2012). Early Experiences in running Many-Task Computing workloads on GPGPUs. XSEDE'12. Chicago, IL.
Ladd, K., Ong, B. (2012). Fault Tolerant Algorithms for the Solution of Partial Differential Equations. XSEDE'12. Chicago, IL.
Liu, Y., Shih, L., Chang, K. (2012). Implementation of Open-Source Parallel Finite-Difference-Time-Domain Package on TACC Ranger for the Design of Terahertz Devices. XSEDE'12. Chicago, IL.
Lum, H., Shih, L. (2012). Toward Optimized Parallel Mapping with Matrix Transform. XSEDE'12. Chicago, IL.
Mandry, S., Cortese, J., Seymour, K., Wong, K. (2012). An Interoperable Executive Library for Multiphysics Simulation. XSEDE'12. Chicago, IL.
Mantha, P. K. (2012). P*: Towards a common model for pilot-jobs. XSEDE'12. Chicago, IL.
Peng, D. (2012). Simulation of electron-photon interaction with high-throughput computing. XSEDE'12. Chicago, IL.

Peterson, J., Wight, C. (2012). Reaction Modeling of Mesoscale Granular Beds of Explosives Subjected to Impact. XSEDE'12. Chicago, IL.
Raut, N., Pallipuram, V., Ren, X., Smith, M. (2012). Exploring Multi-Level Parallelism in GPGPU clusters. XSEDE'12. Chicago, IL.
Stough, D. (2012). Automating the design of unconventional MRI coils using advanced high-throughput computing (HTC) techniques. XSEDE'12. Chicago, IL.
Sukhija, N., Haupt, T. (2012). Autonomic Management of Computational Workflows in Distributed Environment. XSEDE'12. Chicago, IL.
Wijeratne, S., Marru, S., Pierce, M., Weerawarana, S., Padiyar, A. (2012). Building domain specific workbench for a generic workflow system. XSEDE'12. Chicago, IL.
Wu, M., Narasimhan, R. (2012). Position and Vector Detection of Blind Spot motion with the Horn-Schunck Optical Flow. XSEDE'12. Chicago, IL.
Xu, Z. (2012). Growth of cobalt nanostructure via phase separation. XSEDE'12. Chicago, IL.
Zhang, D. (2012). Monte-Carlo based Brownian dynamics simulation of nano-fiber suspensions in nano-composites processing using high-throughput computing. XSEDE'12. Chicago, IL.

Papers:
Beckvermit, J., Peterson, J., Harman, T., Berzins, M., Wight, C. (2012). Multiscale Modeling of High Explosives for Transportation Accidents. XSEDE'12. Chicago, IL.
Erickson, B. (2012). Efficient Production of Synthetic Skies for the Dark Energy Survey. XSEDE'12. Chicago, IL.
Pirtle, B., Kimes, R., McGovern, A., Brown, R. (2012). Improving Tornado Prediction Using Data Mining. XSEDE'12. Chicago, IL.
Romanus, M. (2012). Hands-On with SAGA Python (BlisS). XSEDE'12. Chicago, IL.
Dari, N., Rulis, P. (2012). Fitness Driven Particle Swarm Optimization. XSEDE'12. Chicago, IL.
Leu, B., Liu, A., Sheth, P. (2012). Numerical Studies of the Klein-Gordon Equation in a Periodic Setting. XSEDE'12. Chicago, IL.
Gelernter, J., Wu, G. (2012). High performance data mining of social media. XSEDE'12. Chicago, IL.

G. Diversity

XSEDE12 was noteworthy for its focus on diversity – a tone set by the keynote and plenary speakers. The conference made it a priority to accommodate participants' diverse needs, with sign language interpreters for the plenary sessions, large-print programs, and wheelchair accessibility to all conference venues. The plenary talks were also available as video on the web with sign-language interpreters in the viewing frame.

The XSEDE12 Student Program very definitely aided Of 98 applicants, 45 declined to give ethnicity information, four cited double ethnicity, and 44 declined to state gender. Of those who provided information, 35 were men and 19 women. Ethnicities represented included 19 Asians, eight African-Americans, seven Latinos, 20 Caucasians, and three "Other"

(Taiwanese-American, Trinidadian, and Middle Eastern). Applicants included 15 high school students, 31 undergraduates, 24 master's candidates, and 28 doctoral candidates. Twenty-seven of the applicants were the first in their family to attend college; 26 came from Minority-Serving Institutions (MSIs).

Overall the diversity of attendees was very high for a conference in technology areas, as shown in the tables below. Just under 25% of attendees were women, and 20% were African American, which stand out as indicators of distinct success in reaching populations that are often underrepresented at technology conferences.

Race/Ethnicity	Frequency	Percent
American Indian/Alaska Native		
Asian	35	20%
Black/African American	16	9%
Hispanic/Latino	14	8%
Native Hawaiian/Other Pacific Islander		
White	**108**	**62%**
Multiracial	2	1%

Table 1. Self-reported ethnicity of attendees

Gender	Frequency	Percent
Male	**139**	**75.5%**
Female	45	24.5%

Diversity was even greater among students – a good sign for the future. 38% of the student attendees were women, and 26% of the student attendees were African Americans.

H. Overall satisfaction with conference

The appendices provide a detailed analysis of surveys of conference attendees. Overall, responses to questions about the conference were very positive. On a 1-5 Likert scale where 5 is the most positive rating, the average response to most questions was between 3.5 and 4.5 the average response to the question asking for an overall rating of the conference was 4.24. Comments were also on average positive.

There were shortcomings in certain aspects of the conference. Wireless networking at the conference venue was one of them. These areas where the attendees noted needs for improvement were noted, and this information was conveyed to organizers of XSEDE13.

I. Hotel venue and social programs

Figure 3. The entry of the InterContinental Chicago Hotel

The XSEDE12 Conference site was the beautiful InterContinental Chicago (Magnificent Mile) at 505 N. Michigan Ave, in the heart of Chicago's most interesting tourist destinations and best shopping.

Two optional social events were arranged for XSEDE12 attendees – a tour of Willis Tower and the Chicago Cubs. True to Chicago experience, the Cubs lost to the Miami Marlins in a game that was not as close as it sounded at 9-5.

Figure 4. Willis Tower

Figure 5. Entry to Wrigley Field.

J. News Wrap-up - Stories from the conference

"XSEDE gaining speed as Year Two begins"

—John Towns, opening talk

"Lack of minority representation in science and engineering endangering U.S. economic health"

—Richard Tapia, keynote

"Proving the case for climate change with hi-res models"

— Jim Kinter plenary talk

"Bridging from the eXtreme to the campus and beyond at XSEDE12"

"Building a new bridge between XSEDE and PRACE"

"Deeper collaboration between PRACE and XSEDE proposed"

— Thomas Eikermann plenary talk

"Steven Reiner urges scientists to tell their stories"

—Steven Reiner closing talk

K. Acknowledgments

K.1. Program committee and conference activities

The XSEDE12 program committee contributed greatly to the success of the conference:

- Overall Leadership
  - General Chair: Craig Stewart, Indiana University
  - Deputy Chairs: Warren Froelich, SDSC; Kay Hunt, Purdue
  - Finance and Registration Chair: Jeff Gaede, NCSA
  - Communications Chair: Susan McKenna, NCSA

- Technical Program
  - Chair: Philip Blood, PSC
  - Deputy Chair: Amit Majumdar, SDSC
  - Science Track Chair: Carlos Rosales-Fernandez, TACC
  - Science Track Deputy Chairs: Jan Odegard, Rice; Frank Willmore, TACC
  - Technology Track (Systems and Middleware) Chair: Victor Hazlewood, NICS
  - Technology Track Deputy Chair: Thomas Hacker, Purdue
  - Software and Software Environments Track (Gateways, Bridging, applications developers) Chair: Jay Alameda, NCSA
  - Software and Software Environments Track (Gateways, Bridging, applications developers) Deputy Chairs: Suresh Marru, Indiana; Ewa Deelman, USC
  - Education, Outreach, and Training Track Chair: Sandie Kappes, NCSA
  - Education, Outreach, and Training Track Deputy Chairs: Renato Figueiredo, U

Florida; Steven Gordon, OSC
    - Poster Track Co-Chairs: Amy Apon, Clemson; J. Barr von Oehsen, Clemson
    - Tutorials Chair: Mark Fahey, NICS
    - Tutorials Deputy Chairs: Galen Arnold, NCSA; Bilel Hadri, NICS
    - Proceedings Chair: Chander Sehgal, Open Science Grid and Fermilab
    - Proceedings Deputy Chair: Raj Kettimuthu, Argonne National Laboratory

- Logistics and Local Arrangements
    - Chair: Warren Froelich, SDSC
    - Deputy Chair: Kay Hunt, Purdue
    - Vendors Liaison: Donna Hunt-Caraballo, HMS Meeting Services
    - Networking and Security Chair: Randy Butler, NCSA
    - Networking and Security Deputy Chair: Tom Hutton, SDSC
    - Visualization Showcase Chair: Amit Chourasia, SDSC
    - Visualization Showcase Deputy Chair: Sean Ahern, NICS
    - Social Events Chair: Amit Chourasia, SDSC
    - Social Events Deputy Chair: Diane Baxter, SDSC
    - Birds of a Feather Sessions Co-Chairs: Susan Mehringer, Cornell; David Lifka, Cornell
    - Awards Chair: Tom Furlani, Buffalo
    - Awards Deputy Chair: Gregor von Laszewski, Indiana
    - Student Volunteers and Program Chair: Jenett Tillotson, Indiana
    - Student Volunteers and Program Deputy Chair: Ange Mason, SDSC
    - Sponsorships and Exhibits Chair: Kay Hunt, Purdue
    - Sponsorships and Exhibits Deputy Chair: Therese Miller, Indiana
    - Campus Champions Chair: Philip Blood, PSC
    - Campus Champions Deputy Chair: Jeff Pummill, Arkansas
    - XSEDE Working Group Chair: Tim Cockerill, NCSA

Chander Sehgal deserves special thanks for his role as Proceedings Chair. An unexpected result of our success in attracting acceptable full papers for the Proceedings was a gap between the amount of work that Chander had expected and the time he invested. The quality of the proceedings is testament to the quality of Chander's work.

Our partners in hosting the conference deserve special thanks: Greg Brice, Kenny Armstrong, and their colleagues of AVI; Amy Watts, Alana Zeiger, John Barbier, and their colleagues at Hotel Intercontinental Chicago Miracle Mile; and most especially Donna Hunt (President of HMS Meeting Services), Yvonne Bean (Director of Global Accounts at HelmsBriscoe), and their team (Dianne Matthews, Christine Moore, Jack Williams, and LaKeenya Young). Donna, Yvonne, and their staff deserve tremendous credit for their critical roles in the success of the conference. Thanks also go to John Towns, XSEDE PI, and co-PIs Jay Boisseau (TACC), Ralph Roskies (PSC), and Nancy Wilkins-Diehr, as well as the National Science Foundation and Barry Schneider. Thanks go also to the IU staff who

worked to support and organize XSEDE12:

Nina Paine, Rudeana Honeycutt, Daphne Siefert-Herron, and Karen Garrett (Office of the VP for IT); Richard Knepper, Therese Miller, Julie Wernert, and Malinda Husk (Research Technologies and Pervasive Technology Institute); and Beth Plale (Professor, IU School of Informatics and Computing and Managing Director of the IU Pervasive Technology Institute).

K.2. Sponsors

A conference of the scope of XSEDE12 would not exist without the generous contributions of sponsors. We especially appreciate the considerable support from: Appro International, Inc.; the Coalition for Academic Scientific Computation (CASC); the Computation Institute; Cray; Dell and Intel; FutureGrid; NVIDIA; Penguin Computing; the San Diego Supercomputer Center; and the Indiana University Pervasive Technology Institute. These organizations were willing and able to support the first XSEDE conference. We deeply appreciate their generosity and faith that the conference would prove meritorious of their support.

Platinum Sponsors

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Bronze Sponsor

NVIDIA Corporation	

Non-profit Silver Sponsor

Computation Institute	

Non-profit Bronze Sponsors

Coalition for Academic Scientific Computation	
FutureGrid	
Indiana University Pervasive Technology Institute	
San Diego Supercomputing Center	

Three grant awards directly aided the planning and execution of this conference. NSF award #1053575 (John Towns, National Center for Supercomputing Applications, PI; and Ralph Roskies, Pittsburgh Supercomputing Center; John Boisseau, Texas Advanced Computing Center; and Nancy Wilkins-Diehr, San Diego Supercomputer Center, Co-Principal Investigators) funded much of the cost of planning this conference and some of the cost of its execution. NSF award #1237393 (Jennet Tillotson, Indiana University Pervasive Technology Institute, Principal Investigator; Philip Blood, Pittsburgh Supercomputing Center, and Timothy Cartwright, University of Wisconsin, Co-Principal Investigators) supported participation of some of the student and Campus Champion attendees. The time of Nina Paine and some of the time of Craig Stewart dedicated to planning this conference was funded by a grant from the Lilly Endowment, Inc., to Indiana University to create the Indiana University Pervasive Technology Institute. The

contributions in this proceedings volume indicate the many sources of support that have enabled the scientific, technical, and educational achievements described in this conference.

The Association for Computing Machinery, Inc., deserves thanks for allowing XSEDE to host this event in cooperation with the ACM SIGAPP and publish this record of the intellectual material that is the core of the conference. We especially thank the leadership of SIGAPP — Chair Sung Shin and Vice Chair Richard Chbeir — and hope that the XSEDE12 conference marks the beginning of a long and productive collaboration between XSEDE and ACM SIGAPP.

L. Appendices

1. Attendee Survey

N = 198, 34% (198/586) Response Rate

Conference Activities

To what extent were the following events and activities valuable to you?

Statement	Did Not Attend	N	Not At All Valuable = 1	Somewhat Valuable = 2	Neutral = 3	Moderately Valuable = 4	Very Valuable = 5	Mean	SD
General Session given by Craig Stewart, John Towns, Richard Tapia	35	163	25 15.3%	24 14.7%	17 10.4%	42 25.8%	55 33.7%	3.48	1.467
EOT Invited Speaker Edith Gummer	133	65	4 6.2%	3 4.6%	15 23.1%	33 50.8%	10 15.4%	3.65	1.007
Tech Invited Talk: Gordon: Design, Perform-ance, and Experien-ces Deploying and Support-ing a Data Intensive Supercom-puter	103	95		3 3.2%	15 15.8%	41 43.2%	36 37.9%	4.16	0.803
Science Invited Talk: Multiscale simula-	131	67		4 6.0%	16 23.9%	30 44.8%	17 25.4%	3.90	0.855

tions of blood-flow: From a platelet to an artery									
Tech Invited Talk: UNICORE 6 in XSEDE	141	57	4 7.0%	4 7.0%	19 33.3%	20 35.1%	10 17.5%	3.49	1.088
General Session by Thomas Eicker-mann	98	100	2 2.0%	6 6.0%	28 28.0%	43 43.0%	21 21.0%	3.75	0.925
Software Invited Talk: Building your personal HTC Science Gateway	133	65	3 4.6%	5 7.7%	22 33.8%	25 38.5%	10 15.4%	3.52	1.002
General Session by Gayatri Burago-hain & Jim Kinter	88	110	6 5.5%	8 7.3%	21 19.1%	42 38.2%	33 30.0%	3.80	1.115
Poster Session & Visualization Showcase	72	126	1 0.8%	6 4.8%	12 9.5%	50 39.7%	57 45.2%	4.24	0.871
Awards Luncheon Speaker: Steven Reiner	94	104	3 2.9%	2 1.9%	15 14.4%	30 28.8%	**54 51.9%**	4.25	0.973

To what extent do you agree with the following statements regarding the XSEDE12 conference?

Statement	**N/A**	**N**	**Strongly Disagree = 1**	**Disagree = 2**	**Neutral = 3**	**Agree = 4**	**Strongly Agree = 5**	**Mean**	**SD**
I have a better understanding of XSEDE as a result of this experience	15	183	21 11.5%	25 13.7%	21 11.5%	74 40.4 %	42 23.0%	3.50	1.296

The presentations improved my knowledge and understanding of the topics covered	17	181	1 0.6%		24 13.3%	105 58.0 %	51 28.2%	4.13	0.670
The information on the XSEDE12 website was sufficient for planning my time at the conference	7	191	6 3.1%	11 5.8%	37 19.4%	87 45.5 %	50 26.2%	3.86	0.977
The conference activities I attended were well-organized	11	187	1 0.5%	3 1.6%	18 9.6%	110 58.8 %	55 29.4%	4.15	0.695
The conference schedule allowed sufficient time for breaks and informal meetings/networking	9	189	1 0.5%	12 6.3%	37 19.6%	88 46.6 %	51 27.0%	3.93	0.876
The paper/abstract/poster submission and selection process was reasonable	73	125	2 1.6%	2 1.6%	22 17.6%	61 48.8 %	38 30.4%	4.05	0.831
There was an adequate number and variety of tutorials	37	161	1 0.6%	5 3.1%	34 21.1%	85 52.8 %	36 22.4%	3.93	0.784
There was an adequate number and variety of BOFs	59	139	1 0.7%	3 2.2%	29 20.9%	78 56.1 %	28 20.1%	3.93	0.748
There was an adequate number and variety of papers and panel sessions	35	163	1 0.6%	2 1.2%	33 20.2%	91 55.8 %	36 22.1%	3.98	0.728
I enjoyed the format of the conference activities	16	182	1 0.5%	2 1.1%	16 8.8%	115 63.2 %	48 26.4%	4.14	0.655
My overall experience met my expectations	6	192	2 1.0%	2 1.0%	14 7.3%	110 57.3 %	64 33.3%	4.21	0.708
I would recommend this conference to others	9	189	1 0.5%		16 8.5%	101 53.4 %	71 37.6%	4.28	0.659
Overall I would rate my experience as successful	8	190	2 1.1%		14 7.4%	109 57.4 %	65 32.8%	4.24	0.76

General information

Race/Ethnicity (N = 175)

Race/Ethnicity	Frequency	Percent
American Indian/Alaska Native		

Asian	35	20%
African American	16	9%
Hispanic/Latino	14	8%
Native Hawaiian/Other Pacific Islander		
White	**108**	**62%**
Multiracial	2	1%

Gender (N = 184)

Gender	**Frequency**	**Percent**
Male	**139**	**75.5%**
Female	45	24.5%

Job title/academic status N = 187

Job title/academic status	**Frequency**	**Percent**
Administrative Staff	5	2.7%
Faculty	24	12.8%
Graduate Student	36	19.3%
High School Student	2	1.1%
Postdoctoral Fellow	6	3.2%
Project Management	9	4.8%
Research Staff	**74**	**39.6%**
Senior Executive	12	6.4%
Undergraduate Student	12	6.4%
Other: All responses to this item are listed below. • *Computational Science Mentor* • *Consultant* • *High School Teacher* • *Sales* • *Vendor* • *VP, Solutions Engineering and Sales* • *Student*	7	3.7%

Place a checkmark next to all that apply to you.

Category	**Frequency**
XSEDE Campus Champion	31
XSEDE funded staff	61
I use XSEDE resources for my research/work	**86**
I use XSEDE resources for my work in education	32
None of the above	37
Cyberinfrastructure organization other than XSEDE: All responses to this item are listed below. • *campus cluster* • *CI-TRAIN* • *CU Boulder*	31

• *European Grid Infrastructure* • *HPC Wales (United Kingdom)* • *I use topics in parallel computing for my independent research* • *I2, PennREN* • *Indiana University* • *iPlant* • *Member of SURA* • *MSU HPCC* • *National Center for Genome Analysis Support* • *NCSA* • *NCSA - collaborative Cyberinfrastructure Programs* • *NSF Cybershare Center at UTEP* • *OSG school* • *OSG SURAgrid* • *OU Supercomputing Center for Education and Research (OSCER)* • *Penn State* • *PI funded by NSF CI program* • *Resource provider* • *SeWitip* • *SSERCA.org* • *TAS* • *TLC2* • *University of Chicago* • *University of Illinois - Collaborative Cyberinfrastructure Programs* • *University of Illinois - NCSA - Collaborative Cyberinfrastructure Programs* • *wanted to learn about XSEDE for future work* • *XSEDE Scholar*	

Which XSEDE12 conference track did you participate in?

Conference Track	**Frequency**
Education, Outreach, and Training Track	93
Science Track	81
Technology Track	**102**
Software and Software Environments Track	90
General	70
Tutorials Only	14
Student Track	12

What was your primary reason for attending XSEDE12?

Primary Reason	Frequency
Make a presentation	83
Attend presentations	117
Attend tutorials	83
Network with colleagues	**131**
Meet with funding agencies	19
Attend exhibits	39
Get technical information/specifications	57
Demo/exhibit projects/products/participate in an exhibit	26
Meet with vendors	14
Other: All responses to this item are listed below. • *all the above except making a presentation and meeting vendors* • *Assess continuity in CC program* • *attend XSEDE Faculty Council Meeting* • *campus champion* • *Campus Champion Focus Group Meeting* • *cover events as communications staffer* • *Discuss Collaboration with XSEDE staff* • *fulfill my volunteer duty from OSG school* • *Host student programming contest* • *Interview users of XSEDE I do not have easy access to locally* • *meet students* • *Meet with remote colleagues* • *Mentor students* • *Minority Outreach facilitator* • *Panel discussion of MSI faculty with XSEDE education staff.* • *participant in scholars program* • *Run an XSEDE outreach program* • *run scientific programming contest* • *to publish a paper* • *XSEDE project meeting* • *XSEDE scholar* • *XSEDE scholar* • *XSEDE Scholars Program*	23

Highlights of positive comments

These topics received multiple positive comments:

- **Students**: Conference program, participation, opportunities
- **Diversity**: Of topics, opportunities, presentations, disciplines, participants, speakers, perspectives, opportunities for interacting and building community

Other representative comments:

The main strength was the smaller setting and shorter more manageable time frame (3-day conference) of XSEDE with a stronger focus on academic needs than large meetings like SC. The number and selection of meetings was great with sufficient time for people to meet either for breakfast or at breaks or lunch or with quiet meeting areas upstairs. And the setting in downtown Chicago with its many bars and restaurants for evening outings and discussions was just perfect.

The strengths of the XSEDE12 conferences are 1) the group is relatively small (as compared to the crowd at SC conferences, for example), 2) the activities were well organized, and 3) the catering selections were fantastic.

XSEDE12 brings together the leaders in HPC education and provides a venue for the community to grow and build upon itself. I would recommend this to anyone interested in learning more about HPC and how to teach it.

I think there is a little bit for everyone. EOT, Technology, Science. A wide variety of topics were covered. I also thought the tutorials were great, not just in topics but in quality of presentations.

Technology track and software track are relevant to my work at and HPC and provided an introduction to opening useful tools for HPC users.

Numbers of highly qualified professionals attended. Participants seem to be among the best in their various areas of expertise.

Constructive criticism and negative comments

An introductory talk for people who are not familiar with the computing infrastructure. The resources, who's using them, how they get funding, accounts etc., and what are the challenges for the community.. . . Many presenters did not account for the fact that they were presenting to a more general audience than they usually do. Jargon and extremely technical details often left me lost and disinterested.

Make a substantial effort in devising what are the interests of the diverse underrepresented groups, how these interests can be specifically addressed by XSEDE. Engage these groups in discussions and pilot projects with the XSEDE community and bring this dialogue and interaction into the next conference.

More hands-on tutorials and more time to attend them, especially for students and postdocs. At least one student/postdoc-led panel discussion but with attendance and participation of faculty, program managers and XSEDE officials. Students/postdocs need a more visible way to be able to express their views, interests, and needs.

Conference session info came out late and the online format was tedious to navigate. Would have preferred an option for a simple pdf of the schedule. . . . I wasn't able to access the conference schedule on my smart phone in a usable manner.

The conference rooms were distributed on multiple floors and it was a bit confusing to track move between sessions. The wireless network was poor . . .. The wireless should also be strengthened for participants to use the cyberinfrastructure during tutorial sessions.

2. Student Survey

(N = 30, Response Rate: 27%, 30/113)

Conference Activities

To what extent were the following sessions and activities useful to you?

Statement	N	Did Not Attend	Not at all Useful = 1	Somewhat Useful = 2	Neutral = 3	Moderately Useful = 4	Very Useful = 5	Mean	SD
XSEDE Scholars Program Student Reception: Sunday 7/15, 4-6pm	16	14				6 37.5%	10 62.5%	4.63	.50
Student/Mentor Dinner Reception: Sunday 7/15, 6pm	25	5	2 8.0%	1 4.0%		9 36.0%	13 52.0%	4.20	1.19
STUDENT TUTORIAL: Introduction to High-Performance Computing (AM Session)	10	19	1 10.0%	1 10.0%	3 30.0%	3 30.0%	2 20.0%	3.40	1.27
STUDENT TUTORIAL: Topics in High-Performance Computing (PM Session)	9	20	1 11.1%	2 22.2%	1 11.1%	2 22.2%	3 33.3%	3.44	1.51
STUDENT TUTORIAL: Supercomputing in Plain English, Part 1	15	15	2 13.3%		1 6.7%	3 20.0%	9 60.0%	4.13	1.41
STUDENT TUTORIAL: Supercomputing in Plain English, Part 2	17	13	5 11.8%			10 58.8%	5 29.4%	3.94	1.20
XSEDE Scholars Program Dinner: Monday 7/16, 6pm	12	18	1 8.3%	1 8.3%		2 16.7%	8 66.7%	4.25	1.36
XSEDE Student Engagement summer Immersion Experiences	9	21	1 11.1%			5 55.6%	3 33.3%	4.00	1.23
XSEDE Scholars Program dinner session: Tuesday 7/17, 4-6pm	12	18	1 8.3%			5 41.7%	6 50.0%	4.25	1.14
Student Programming Contest	12	17	1 8.3%	3 25.0%	2 16.7%	2 16.7%	4 33.3%	3.42	1.44
Poster Reception & Student Poster Contest	21	8	1 4.8%		1 4.8%	6 28.6%	13 61.9%	4.43	.99

Overall experience

To what extent do you agree with the following statements regarding the XSEDE12 conference?

Statement	N	N/A	Strongly Disagree = 5	Disagree = 4	Neutral = 3	Agree = 2	Strongly Agree = 1	Mean	SD
I have a better understanding of XSEDE as a result of this experience	29	1			3 10.3%	12 41.4%	14 48.3%	4.38	.68
The speakers stimulated my interest	29	1		1 3.4%	2 6.9%	15 51.7%	11 37.9%	4.24	.74
The presentations improved my knowledge and understanding of the topics covered	30	0	1 3.3%		6 20.0%	14 46.7%	9 30.0%	4.00	.91
I have a better understanding of my role as a student affiliated with XSEDE as a result of this experience	26	4	1 3.8%		5 19.2%	14 53.8%	6 23.1%	3.92	.89
I am interested in doing research involving advanced digital resources	27	3			2 7.4%	11 40.7%	14 51.9%	4.44	.64
The resources given to us at the conference were valuable to me	28	2	1 3.6%		6 21.4%	12 42.9%	9 32.1%	4.00	.94
The student activities I attended were well-organized	28	2	1 3.6%	1 3.6%	5 17.9%	12 42.9%	9 32.1%	3.96	1.00
I enjoyed the format of the student activities	27	3	1 3.7%		6 22.2%	9 33.3%	11 40.7%	4.07	1.00
My overall experience met my expectations	30	0	1 3.3%		3 10.0%	16 53.3%	10 33.3%	4.13	.86
I would recommend this conference to others	30	0	1 3.3%		3 10.0%	13 43.3%	13 43.3%	4.23	.90
Overall I would rate my experience as successful	30	0	1 3.3%			17 56.7%	12 40.0%	4.30	.79

General Information

What is your academic status? (N = 30)

Academic Status	Frequency	Percent
High School Student	1	3.3
Undergraduate Student	11	36.7

Graduate Student	18	60.0
Postdoctoral Fellow		
Other		

Please place a checkmark next to all the programs that apply to you (N = 30)

Program	Frequency
XSEDE12 Student Program	10
XSEDE Student Engagement Program	2
XSEDE Scholars Program	9
OSG User School	5
I am attending the conference alone	13
I am attending the conference with my advisor	5
Other (please specify) All comments to this item are listed below: • *I am attending with a non-profit org*	1

What is your primary scientific domain? (i.e. Astronomy, Physics, Biology, etc.) (N = 28)

Scientific Domain	Frequency
Astronomy	1
Bioengineering	1
Bioinformatics	1
Biology	2
Biophysics	1
Chemistry	2
Computational Linguistics	1
Computational Science	3
Computer Science	2
Computer Science	4
Computer Science and Engineering	1
Economics	1
Electrical Engineering	1
Information Science	1
Material Science	1
Mathematics	2
Physics	8

Gender (N = 29)

Gender	Frequency	Percent
Female	11	38%
Male	18	62%

Race/Ethnicity **(**N = 27)

Race/Ethnicity	Frequency	Percent
Asian	3	11%
African American	7	26%
Hispanic	5	19%
Multiracial	1	4%
White	11	41%

Highlights of positive comments

This was a fantastic experience and has certainly made me want to do some research with supercomputing. The conversations I had with peers, researchers, and professors were very helpful.

The strengths of the conference are that the students were always comfortable and the staff would always try to make them feel comfortable, important, and part of the group.

The community is very interactive, there is lots of positive discussion between different rooms and disciplines facilitating advancement.

I felt the tutorials were the biggest strength of the conference. The tutorial "Supercomputing in Plain English" was fantastic and Dr. Neeman was an excellent speaker. I also took a lot out of the general sessions. . . Dr. Tapia's presence and involvement with all XSEDE Scholars. The HPC Parallel Programming Tutorial. The mentor dinner was very informative

Variety of research topics focusing on high performance computing. Really useful for today's research.

The opportunity to meet the scholars and professionals who use XSEDE resources.

Good split between science and technology.

Very informative. Good networking.

Constructive criticism and negative comments

I just think it would be better to give a more solid intro to those who are still novices in the field.

For the student program, perhaps a range of tutorials. The tutorials were the absolute basics of computing down to navigating a terminal which is fine but then the talks were more advanced. Perhaps something in the middle for students i.e. a little more basic Linux familiarity. Maybe jol schedulers/scripts, resource managers

Expand the fields that the activities cover. Add more computing related specializations/fields to the activities. I think more industry representatives should be present.

Give more settings (maybe social) where meeting people would be nice. The dinner the first night was good for this but more interaction would be good.

The students mentor/dinner reception would have been better if there was at least 1 mentor per table at the start of dinner. . . More time with mentors.

3. Staff Survey

(N=46)

Conference Activities

To what extent were the following events and activities valuable to you?

Statement	Did Not Attend	N	Not at all Valuable = 1	Somewhat Valuable = 2	Neutral = 3	Moderately Valuable = 4	Very Valuable = 5	Mean	SD
General Session given by Craig Stewart, John Towns, Richard Tapia	9	37		4 (10.8%)	1 (2.7%)	13 (35.1%)	19 (51.4%)	4.27	.962
EOT Invited Speaker Edith Gummer	32	14	1 (7.1%)		3 (21.4%)	9 (64.3%)	1 (7.1%)	3.64	.929
Tech Invited Talk: Gordon: Design, Performance, and Experiences Deploying and Supporting a Data Intensive Supercomputer	25	21		1 (4.8%)		14 (66.7%)	6 (28.6%)	4.19	.680
Science Invited Talk: Multiscale simulations of blood-flow: from a platelet to an artery	28	18			7 (38.9%)	6 (33.3%)	5 (27.8%)	3.89	.832
Tech Invited Talk: UNICORE 6 in XSEDE	28	18	1 (5.6%)	2 (11.1%)	7 (38.9%)	4 (22.2%)	4 (22.2%)	3.44	1.15
General Session given by Thomas Eickermann	22	24		2 (8.3%)	7 (29.2%)	9 (37.5%)	6 (25.0%)	3.79	.932
Software Invited Talk: Building your personal HTC Science	34	12	1 (8.3%)	1 (8.3%)	3 (25.0%)	6 (50.0%)	1 (8.3%)	3.42	1.08

Gateway									
General Session given by Gayatri Buragohain & Jim Kinter	19	27		2 (7.4%)	1 (3.7%)	15 (55.6%)	9 (33.3%)	4.15	.818
Poster Session & Visualization Showcase	14	32		2 (6.3%)	4 (12.5%)	13 (40.6%)	13 (40.6%)	4.16	.884
Awards Luncheon-Speaker: Steven Reiner	12	34	1 (2.9%)	2 (5.9%)	2 (5.9%)	13 (38.2%)	16 (47.1%)	4.21	1.01

Overall Experience

To what extent do you agree with the following statements regarding the XSEDE12 conference?

Statement	**N/A**	**N**	**Strongly Disagree = 1**	**Disagree = 2**	**Neutral = 3**	**Agree = 4**	**Strongly Agree = 5**	**Mean**	**SD**
I have a better understanding of XSEDE as a result of this experience	10	36		1 (2.8%)	6 (16.7%)	19 (52.8%)	10 (27.8%)	4.06	.754
The presentations improved my knowledge and understanding of the topics covered	6	40			3 (7.5%)	27 (67.5%)	10 (25.0%)	4.18	.549
The information on the XSEDE12 website was sufficient for planning my time at the conference	4	42		3 (7.1%)	9 (21.4%)	20 (47.6%)	10 (23.8%)	3.88	.861
The conference activities I attended were well-organized	6	40		2 (5.0%)	9 (22.5%)	20 (50.0%)	9 (22.5%)	3.90	.810
The conference schedule allowed sufficient time for breaks and informal meetings	4	42	1 (2.4%)	3 (7.1%)	10 (23.8%)	18 (42.9%)	10 (23.8%)	3.79	.976
The paper/abstract/poster submission and selection process was reasonable	13	33		1 (3.0%)	7 (21.2%)	19 (57.6%)	6 (18.2%)	3.91	.723
There was an adequate number and variety of	12	34			10 (29.4%)	15 (44.1%)	9 (26.5%)	3.97	.758

tutorials									
There was an adequate number and variety of BOFs	15	31		1 (3.2%)	9 (29.0%)	15 (48.4%)	6 (19.4%)	3.84	.779
There was an adequate number and variety of papers and panel sessions	9	37			9 (27.3%)	20 (54.1%)	8 (21.6%)	3.97	.687
I enjoyed the format of the conference activities	7	39		1 (2.6%)	5 (12.8%)	23 (59.0%)	10 (25.6%)	4.08	.703
My overall experience met my expectations	5	41	1 (2.4%)		3 (7.3%)	23 (56.1%)	14 (34.1%)	4.20	.782
I would recommend this conference to others	7	39			4 (10.3%)	20 (51.3%)	15 (38.5%)	4.28	.647
Overall I would rate my experience as successful	5	41	1 (2.4%)		5 (12.2%)	24 (58.5%)	11 (26.8%)	4.07	.787

XSEDE Staff Activities

To what extent do you agree with the following statements regarding the XSEDE staff meetings at XSEDE12?

Statement	**N/A**	**N**	**Strongly Disagree = 1**	**Disagree = 2**	**Neutral = 3**	**Agree = 4**	**Strongly Agree**	**Mean**	**SD**
My schedule permitted me to attend all the staff meetings of interest to me	4	42	3 (7.1%)	4 (9.5%)	2 (4.8%)	21 (50.0%)	12 (28.6%)	3.83	1.167
Attending the staff meetings at the end of XSEDE12 was convenient for me		46	2 (4.3%)	5 (10.9%)	6 (13.0%)	20 (43.5%)	13 (28.3%)	3.80	1.108
The XSEDE12 staff meetings were well-organized	5	41	2 (4.9%)	6 (14.6%)	7 (17.1%)	19 (46.3%)	7 (17.1%)	3.56	1.097
I feel more connected to other XSEDE staff members as a result of this experience	5	41		1 (2.4%)	8 (19.5%)	20 (48.8%)	12 (29.3%)	4.05	.773
The length of the XSEDE staff meetings was appropriate	4	42		2 (7.1%)	13 (31.0%)	17 (40.5%)	9 (21.4%)	3.76	.878
Sufficient cross-	5	41		3	9	21	8	3.83	.834

communication occurred during the staff meetings				(7.3%)	(22.0%)	(51.2%)	(19.5%)		
I enjoyed the format of the XSEDE staff meetings	5	41		3 (7.3%)	16 (39.0%)	14 (34.1%)	8 (19.5%)	3.66	.883
The staff meetings met my expectations	6	40		5 (12.5%)	9 (22.5%)	18 (45.0%)	8 (20.0%)	3.73	.933

General Information

Race/Ethnicity (N = 41)

Race/Ethnicity	Frequency	Percent
American Indian/Alaska Native		
Asian	13	32%
African American	1	2%
Hispanic/Latino	3	7%
Native Hawaiian/Other Pacific Islander		
White	24	59%

Gender (N = 43)

Gender	Frequency	Percent
Male	32	74%
Female	11	26%

Job Title/Academic Status (N = 45)

Job Title/Academic Status	Frequency	Percent
Research Staff	26	58%
Faculty	5	11%
Postdoctoral Fellow		
Graduate Student	1	2%
Other: *All responses to this item are listed below.* • *Academic Professional* • *academic professional, non-research* • *Assistant Director, NCSA* • *External Relations Manager* • *Network Engineer* • *program manager* • *Project Management Staff* • *Project Manager* • *Senior Resource & Policy Analyst* • *Technical Staff* • *Undergraduate student*	13	29%

• *XSEDE HPC center staff*		

Place a check mark next to all that apply to you.

Category	Frequency
Campus Champion	1
XSEDE funded staff	41
I use XSEDE resources for my research/work	18
I use XSEDE resources for my work in education	8
None of the above	1
Cyberinfrastructure organization other than XSEDE. Please specify: All responses to this item are listed below. • *University of Illinois - Collaborative Cyberinfrastructure Programs* • *University of Illinois - NCSA - Collaborative Cyberinfrastructure Programs*	2

What were your primary reasons for attending XSEDE12?

Primary Reason	Frequency
Attend XSEDE annual meetings	34
XSEDE12 Planning Committee	8
Make a presentation	18
Attend presentations	34
Attend tutorials	15
Network with colleagues	**37**
Meet with funding agencies	8
Attend exhibits	6
Get technical information/specifications	13
Demo/exhibit projects/products/participate in an exhibit	5
Meet with vendors	3
Other: • *All responses to this item are listed below.* • *cover events as communications staffer* • *meet students* • *Mentor students* • *Run an XSEDE outreach program* • *XSEDE project meeting*	5

Which XSEDE12 conference track did you participate in?

Track	Frequency
Education, Outreach, and Training Track	18
Science Track	23
Technology Track	27

Software and Software Environments Track	17
General	27
Tutorials Only	
XSEDE12 Planning Committee	
Did not participate in a conference track	

Highlights of positive comments

These topics received multiple positive comments:

- Key notes/invited speakers
- Student program/participation
- Meeting meeting/networking 7
- Variety of content and opportunities

Other representative comments:

[The conference] brings all the XSEDE staff and users face to face so that both sides can learn about each sides need, research, research results, infrastructure/software deployment plan, and information about existing hardware/software.

25% of the attendees were students and it was very helpful for me to see how they perceive XSEDE and the conference environment

The general session with Richard Tapia was most useful because he knows exactly what to say and how to say something so empowering and motivating for students.

Bringing the cyberinfrastructure community together. State of the project update. Excellent quality of poster session presentations.

Excellent connections to users, about the right size - easy to meet people, good talks!

There was diversity in the science talks. The atmosphere was collegial. Most of the presentations were interesting and helpful.

Constructive criticism and negative comments

Make a substantial effort in devising what are the interests of the diverse underrepresented groups, how these interests can be specifically addressed by XSEDE. Engage these groups in discussions and pilot projects with the XSEDE community and bring this dialogue and interaction into the next conference.

I would suggest sending out notices about the XSEDE13 conference way in advance through all the channels that can reach underrepresented groups. For e.g. just the dates and locations of XSEDE13 can be sent out many months in advance to these groups with a brief flyer or intro about XSEDE13.

The leadership can consider to start with diversities in the committees first and let the committees encourage the participation of their colleagues. Specific invitations of MSIs and social science faculties for speakers and

participation need to be looked at. Some awards for underrepresented groups may encourage the participation as well.

The technical program committee should include a Diversity Chair, charged with recruiting technical paper submissions (in all tracks) from underrepresented groups. This person should work with TEOS and ECSS NIP.

*For staff: Make sure to set aside dates for the annual staff meetings *at least* one year in advance, summer is a busy time for educational events which I (and other TEOS staff).*

The conference rooms were distributed on multiple floors and it was a bit confusing to track move between sessions. The wireless network was extremely poor for demonstrations and tutorial sessions and wired connections for podium would be required for ensuring success in cyberinfrastructure demonstrations. The wireless should also be strengthened for participants to use the cyberinfrastructure during tutorial sessions for a good experience.